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DECONTAMINATION PROCEDURES TO BE USED BY USSR ARMED FORCES PERSONNEL  
ON EXPOSURE TO RADIOACTIVE SUBSTANCES

[Comment: This report, by D. Ivanov, Candidate of Medical Sciences, colonel of the Medical Service, and M. Fomenko, Candidate of Medical Sciences, colonel of the Medical Service, was published in Krasnaya Zvezda, Moscow, 24 December 1954.]

Precautionary measures taken at the time of an atomic explosion and after leaving the zone of contamination considerably lower the danger of injury, but do not eliminate it entirely. The possibility remains, that radioactive substances may have come in contact with exposed sections of the body, uniforms, equipment, and arms. This means that the men may be exposed to the effects of radioactivity. As a result, injuries of the skin and of the mucous membranes of the eyes, nose, and mouth may arise. At the same time, there is a great danger of being affected by radioactive substances which have entered the body. This danger can be eliminated only by removing the radioactive substances.

The removal of the radioactive substances from the skin of human beings and from the mucous membranes of the eyes, nose, and mouth is referred to as sanitary treatment, while removal of these substances from the uniforms and equipment is referred to as "desactivation." One distinguishes between partial and complete sanitary treatment and partial and complete "desactivation." Partial sanitary treatment consists, first of all, in the removal of radioactive substances from those areas of contaminated objects with which the personnel may come in touch. In complete sanitary treatment, the radioactive substances are removed from the whole body, while in complete "desactivation," they are removed from the total surface of the uniforms and equipment.

The most accessible and most reliable methods of removing dust and together with it radioactive substances under field conditions in shaking out, beating out, and rinsing in water of the objects involved, but these simple measures will yield a positive result only in the case when definite rules are applied in carrying them out. Partial sanitary treatment and "desactivation," i.e., removal of dust from exposed portions of the body, from the uniforms, and from the footwear should be carried out before leaving the contaminated zone, if conditions permit this. Naturally, reference is made to removal of dust which does not involve undressing or taking off one's footwear. For the purpose of removing dust, one may use brushes or makeshift aids such as waste, the branches of trees, bunches of grass, hay, or straw, after making sure that the materials and appliances used are themselves free of visible soil. This type of partial sanitary treatment should be started by removing the dust from exposed portions of the body, i.e., the face, the neck, and the hands.

Removal of radioactive substances from exposed portions of the body can be carried out by using moist cotton wads. When cotton wads are not available, a handkerchief, towel, or clean rag which has been moistened in water can be used. Water from springs or sources within the contaminated area should be used only after ascertaining that the water does not contain radioactive substances. If water from local reservoirs and other available local supplies cannot be used, a portion of one's personal water supply from the flask should be used. In doing this, one should make certain that the cotton wad or other material which is being moistened does not come in contact with the flask; otherwise the whole water supply in the flask will be contaminated with radioactive substances and will be rendered unsuitable for drinking.

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When radioactive substances are removed from the surface of the skin with the aid of cotton wads, this procedure should be performed in a certain manner. The skin should be rubbed with a cotton wad in one direction only, without moving the cotton wad in the opposite direction. The cotton wad must be turned each time so that the clean side is used and the soiled cotton should be replaced as often as possible. The portions of the skin which are soiled to the greatest extent should be treated first; after this, the remainder of the exposed skin.

Before treating the uniforms, one should put on the gas mask to prevent the inhalation of the radioactive dust. Equipment for protection against chemicals should not be taken off in partial sanitary treatment unless the persons involved have left the contaminated area.

If the local military situation precludes partial sanitary treatment in the contaminated area, this treatment should be carried out after leaving the contaminated area. The protective clothing is removed: first the cape, then the protective stockings, and after this the gas mask and the gloves. The uniform should be removed and shaken out or beaten out. When this is done, the direction of the wind should be taken into consideration: The dust must be prevented from blowing toward human beings.

When water is available, hands, face, and head should be thoroughly washed and wiped with clean cotton wads, a towel, or a handkerchief. In winter, uncontaminated snow can be used for rubbing off the exposed portions of skin and water can be obtained by melting snow.

After partial sanitary treatment, dosimetric control of personnel should be carried out when the commander decides to do so. Dosimetric control is carried out by means of special equipment to determine the degree of contamination with radioactive substances. If the degree of contamination exceeds the permissible limit, the personnel should be directed to a place where complete sanitary treatment can be carried out. This, of course, is done only if the local military situation does not preclude this action. Complete sanitary treatment is carried out to remove completely the radioactive substances from the whole surface of the body and thus to eliminate the possibility that they may exert further action on the person contaminated with them. Complete sanitary treatment is organized according to a definite system which makes impossible renewed contamination at any of the stages of the treatment. In carrying out this treatment, contact between [newly arriving] contaminated persons and the decontaminated personnel must be prevented. After treatment of the exposed portions of the skin, the removal of dust from uniforms, equipment, and arms may be started. It is advisable to carry out this procedure after putting on protective gloves. If there is no possibility of using gloves, the hands should be subjected to a subsequent treatment with cotton wads.

Complete sanitary treatment is carried out at washing and "desactivation" posts. In complete treatment, washing of the personnel is applied extensively, so that considerable quantities of water are needed. For that reason, sanitary treatment must be carried out in close proximity to a source of water. One must lay out the approaches to the post in such a manner that encounters between contaminated and decontaminated personnel are impossible and secondary contamination does not take place. Depending on the general situation and the disposition, treatment can be carried out at a populated place, in an open area, in a wood, in tents, under a shed, or without any cover. At populated places, it is advisable to use for this purpose the available shower baths, sanitary intermediate stations (propuskniki) and public baths.

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It is known that at the washing and "desactivation" post decontamination of arms and technical equipment is carried out. Decontamination of uniforms and equipment and sanitary treatment are also carried out there. The personnel, after completing the decontamination of the arms and the technical equipment, is directed to a place where decontamination of the uniforms and other equipment is effected. At the latter place, the individual equipment for anti-chemical defense and the outer uniform are taken off. Here the personnel is subjected to dosimetric control.

Decontamination of the uniforms and equipment is performed by special detachments. Persons engaged in the decontamination must be dressed in special protective clothing or overalls, gloves, protective stockings, and gas masks. To beat out the dust from uniforms, the uniforms should be suspended from ropes or from wooden slats.

The area where the decontamination of uniforms and equipment is carried out must be selected in such a manner that the radioactive dust beaten out of uniforms does not reach neighboring sections of the washing and "desactivation" post.

After decontamination, uniforms are subjected to dosimetric control and only then are issued to the personnel. If a high degree of contamination is found, the uniforms are replaced.

Footwear is treated with waste moistened in water or in solutions of detergents. Instead of waste, brushes may be used.

After turning in uniforms and equipment for decontamination, the personnel starts the sanitary treatment immediately, passing in succession through the department for undressing and the department for washing and dressing.

In the department for undressing, the personnel is subjected to dosimetric control. Every person is told which portions of the body are contaminated most and which should receive particular attention in washing. Persons who have injuries of the skin are bandaged temporarily so that the injured portions are covered.

After passing through the department for undressing, the personnel moves to the washing department. The washing department is made sufficiently extensive and has drainage ditches for used water. The best type of equipment for washing are shower installations. However, buckets and wash basins can also be used.

A wash basin or a pail should not be used by two persons simultaneously; this may considerably lower the effectiveness of the sanitary treatment. One must wash his head and feet with particular thoroughness. The washing is carried out in a standing position and must be done with hot water, soap, and bast. In case the skin is contaminated to a considerable extent, it is not advisable to rub the skin energetically with bast, because the outer horny layer of the skin may be damaged and penetration of radioactive substances into the tissue and blood facilitated. In the case of heavy contamination of the skin, the washing must be started by gently rubbing the skin with soft bast which has been moistened in water.

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After leaving the washing department, it is advisable that a dosimetric test be made, to make sure that the sanitary treatment has actually been complete. If necessary, the sanitary treatment is repeated. Persons who exhibit, after repeated sanitary treatment, a degree of contamination which exceeds the permissible limit, must be put under medical observation. Persons who have been subjected to a complete sanitary treatment are issued decontaminated uniforms and are dispatched as directed by the commander.

Correct and efficient organization of sanitary treatment will make it possible to reduce the injurious effects of radioactivity and will aid in preserving the fighting quality of the armed forces.

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